Office of Plangineering
645 Pine Street, Suite A
Burlington, VT 05402
802.863.9094 P
802.863.0466 F
802.863.0450 TTY
www.dpw.ci.burlington.vt.us

Steven Goodkind, P.E.
Director of Public Works
City Engineer

Memo

Date: January 9, 2012

To: Public Works Commission

From: Nicole Losch, Transportation Planner and Bicycle/Pedestrian Program Manager

Subject: Sidewalk Strategic Plan – background, status, and moving forward

---

History

In 2008-2009, DPW staff developed a Sidewalk Strategic Plan (SSP). Prior to development of the Sidewalk Plan, funding was allocated evenly by Ward and improvements were compiled and scheduled in response to complaints. We did not have an inventory of our sidewalk network.

To improve our sidewalk program, our goals were:

1. Identify an acceptable condition for our sidewalks,
2. Lower the life cycle of our system by increasing the number of miles improved each year,
3. Use the most efficient methods for installation,
4. Coordinate projects with other right-of-way improvements to increase efficiency,
5. Utilize alternative funding sources to construct new sidewalk,
6. Move toward a more pro-active planning process,
7. Increase the commitment to curb and greenbelt restoration,
8. Meet American's with Disabilities Act (DAA) requirements, walkability goals, and current standards.

To develop the SSP, we recruited volunteers and inventoried our entire 150-mile sidewalk network; this information became our Sidewalk Deficiency Index. Our sidewalk inventory gave all deficiencies equal priority and included:

Possible hazards & deficiencies:
(only counts one per slab/5' section)

- Vertical displacement across >50% sidewalk or >2" in height
- Horizontal displacement greater than 2% slope
- Drainage problem
- Surface deterioration or material inconsistency
- Surface spalling or cracking
- Obstruction (hydrant, utility pole or cabinet, light pole, signal pole, parking meter, bike rack, tree, sign, structure)

ADA ramp requirements:

- Detectable warning
- Ramp slope < 8.33%
- Ramp > 4'x4'
- Ramp flares' slope < 10%
- Landing slope < 2%
- Landing > 4'x4'
- Ramp lip < ¼"

Sidewalk System Inventory Results - 2009	
City streets	88.6 miles
City sidewalks	150.2 miles
Missing sidewalks	27 miles
Sidewalk needed to meet Transportation Plan policy to have sidewalk on one side of every street and both sides of Complete Streets	4.5 miles

We also developed a system to identify the most-traveled pedestrian routes. Our Pedestrian Potential Index (PPI) assigns points to variables that affect pedestrian travel, such as the volume of traffic and the destinations along a route. The PPI values were discussed at several NPAs and through online surveys. The PPI includes:

Variable	Code	Description	Assigned Value
Type of Road	ART	Arterial	5
	COL	Collector	3
	LCL	Local	1
Major Pedestrian Generators	ASL	W/in 0.25 mi of retirement community, assisted living, or senior center	5
	CC	W/in 0.25 mi of library, community center, places of worship, etc	3
	WK	W/in 1 mile of employment center for > 200 employees	3
	SOC	W/in 0.25 mi of community medical & social services	1
School Zones	ES	W/in 0.25 mi of elementary school	5
	MHS	W/in 0.5 mi of middle or high school	3
	UNV	W/in 1 mi of college or university	3
Transit Routes	TRN	Roads that are transit routes	5
Commercial Areas	DD	W/in Designated Downtown	5
	NAC	W/in 0.25 mi of Neighborhood Activity Center	4
Paths, Trails, & Parks	PK	W/in 0.25 mi	3
No Sidewalks on Either Side	SIDE	City policy for at least one sidewalk on every street	5

The SSP prioritizes sidewalk improvements based on an equal weight of the Deficiency Index and Pedestrian Potential Index. The combined indexes give us a Sidewalk Condition Index, which allows us to identify and prioritize the sidewalks in the worst condition, in the most heavily traveled areas.

In addition to the infrastructure assessment, the SSP development process provided information that changed the programming of annual sidewalk funds to address indirect and direct sidewalk deficiencies. As a result, 10% of the budget is devoted to curb and greenbelt replacement/restoration (to help alleviate drainage, erosion, or splashing problems), 10% of the budget is devoted to sidewalk "patches" of small projects to address complaints or significant safety hazards, and 80% of the budget is devoted to long-run sidewalk repair.

Annual Work Plan

Initial Implementation
In fiscal year 2010 the SSP was implemented. We developed a 5 year work plan that anticipated replacement of:

- 0.91 miles of sidewalk in different sections of three streets in FY10,
- 0.86 miles on five streets in FY11,
- 0.86 miles on seven streets in FY12,
- 0.92 miles on five streets in FY13, and
- 0.88 miles on 8 streets in FY14.

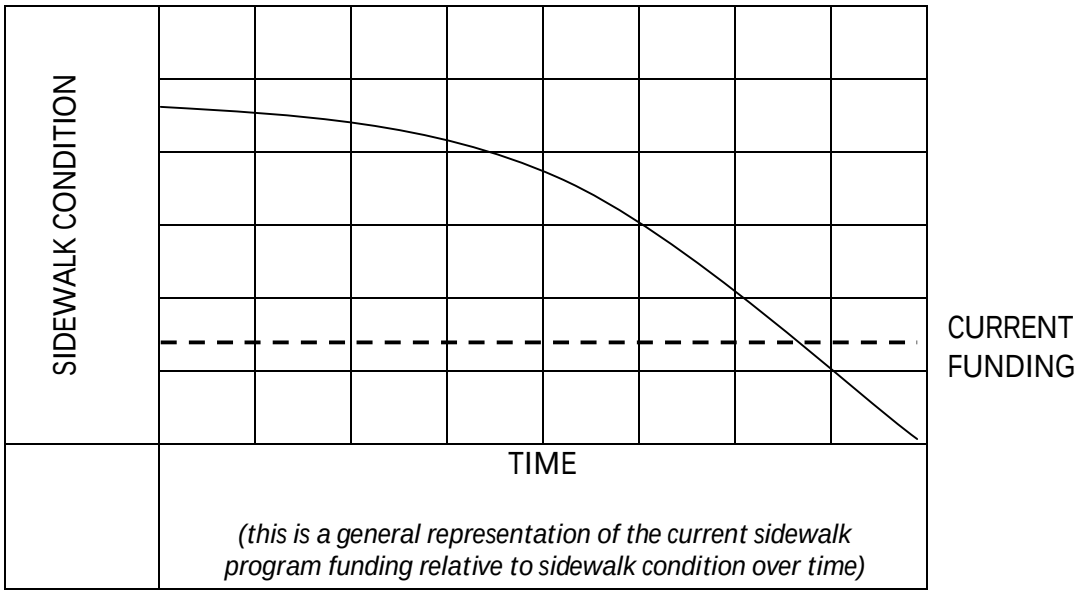
Our Sidewalk Condition Index (SCI) for the sections to be replaced ranged from 82 (worst condition) to 77 (better condition). The average SCI at the beginning of the program was 55.47; after the 5 year improvements, the SCI average was expected to be 49.64.

Next Steps
We have learned several things since implementing this plan in FY2010, and we have planned revisions to ensure more meaningful SCI rankings and ultimately develop a better Sidewalk Strategic Plan. On the positive side, we have learned that we are much more efficient with this plan's focus and priority to replace long sections (as mentioned above, 80% of the program is devoted to long runs). We had estimated completion of 0.86 miles in FY10 but were able to repair 2.29 miles instead.

The area in need of most improvement is our Deficiency Index. We have given equal priority to all sidewalk deficiencies described on Page 1. As we developed our Sidewalk Plan, we felt that a sidewalk with a spalled surface was no better than a sidewalk with a 2" heaved corner; for cost-effectiveness, efficiency, and safety it needed to be replaced in either situation. Each year, we inspect the highest-ranked sidewalks to ensure they are the "worst of the worst" in the most frequently traveled areas. However, as we have inspected the "worst of the worst" in the most frequently traveled areas – as ranked by our Sidewalk Condition Index – we have seen that many of those are not, in fact, the worst. We have had to re-prioritize sidewalks on our list in every year's work plan.

Therefore, we are planning a new sidewalk inventory for 2012. We are considering utilizing technology to assist our inventory. We will also be rewriting our Deficiency index and assigning values as we did for the Pedestrian Potential Index.

Our Sidewalk Plan is still addressing sidewalks with an SCI of 77 and higher; this includes approximately 3.97 miles of sidewalk. This leaves approximately 114.7 miles of sidewalk in need of repair, which – at our current rate of repair with the funding and resources available – will take nearly 50 years and over $45 million dollars to complete. We estimate the lifecycle of our sidewalks to be anywhere from 30 to 50 years, depending on the location and materials. At this rate, we will be in need of significant sidewalk repair in perpetuity.



(this is a general representation of the current sidewalk program funding relative to sidewalk condition over time)

We are continuing to patch sidewalks in the worst condition, as reported through complaints from the public. In addition, we have focused a substantial amount of the program budget to Pearl Street between Winooski Avenue and Saint Paul Street, which was our one downtown sidewalk that clearly did not meet ADA requirements or general walkability initiatives; obstructions from signal poles and utility poles encroached in the sidewalk and reduced the width to less than 4' in some sections.

Pending completion of the Pearl Street sidewalk project, we will reassess the program budget and develop a work plan for the remainder of FY2012 into FY2012. Our improvement list currently includes:

1. Mansfield Ave, East, from McAuley to Colchester
2. Main St, South, from St. Paul to Church
3. Maple St, North, from South Willard to Harrington
4. St. Paul St, West, from Kilburn to Marble
5. St. Paul St, East, from Spruce to Adams
6. Pearl St, North, from George to Elmwood
7. St Paul St, East, from Howard to South Union
8. Pine St, East, from Maple to Kilburn
9. South Union St, West, from College to Main
10. Main St, North, from Church to South Winooski
11. Additional service requests for 37 streets, 279 slabs to replace